



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

November 19, 2013

Via E-mail

Shaker Sadasivam
President and Chief Executive Officer
SunEdison Semiconductor, Inc.
501 Pearl Drive
St. Peters, Missouri 63376

**Re: SunEdison Semiconductor, Inc.
Amendment No. 1 to Registration Statement on Form S-1
Filed November 1, 2013
File No. 333-191052**

Dear Mr. Sadasivam:

We have reviewed your registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Tax Matters Agreement, page 103

1. Please revise the first bullet point to specify "the period[s] before... the completion of this offering" for which (i) you will be responsible for and entitled to any refund in respect of any foreign taxes imposed on you and your subsidiaries and (ii) SunEdison will be responsible for and entitled to any refund in respect of U.S. federal, state, and local taxes imposed on you and your subsidiaries.

Certain U.S. Federal Tax Considerations, page 126

2. Please revise the title of this section and the disclosure in the first sentence of this section to clarify that your discussion addresses the material federal tax considerations rather

than only “certain” considerations. Please similarly revise the heading regarding Singapore tax considerations on page 130.

3. You may not disclaim responsibility for your disclosure. Please revise the first sentence in the second paragraph on page 127 and the first sentence in the sixth paragraph on page 130, accordingly.

Combined Statements of Operations, page F-3

4. Please tell us your consideration of presenting pro forma earnings per share data. Discuss your basis for concluding that earnings per share data is not required.

Notes to Audited December 31, 2012 and 2011 Combined Financial Statements, page F-8

Note 3 - Restructuring, Impairment and Other Charges, page F-14

5. We note your response to prior comment 27. In light of the fact that the charge related to take or pay commitments to purchase inventory, please tell us why you concluded it was appropriate to record the related charge as a component of operating expenses rather than as a component of your cost of goods sold.
6. We note your responses to comments 27 and 28. Your responses indicate that you determined the value of the chlorosilanes plant acquired as part of the settlement of the On-site and Off-site contingencies executed on September 4, 2012. We note you received title to the plant on December 30, 2012. Please tell us the reason(s) why you did not receive title to the plant at the time of the settlement in September 2012 and how this impacted the gain on the receipt of the property.
7. We note that the settlement agreement was executed on September 4, 2012. We further note that title to the chlorosilanes plant was not transferred until December 30, 2012. Please confirm that the fair value of the asset that resulted in the gain was determined as of December 30, 2012. In this regard, please clarify for us how you reflected the settlement transactions in the quarter ended September 30, 2012.
8. We note your settlement with Evonik appears to have been approximately \$117.1 million, inclusive of the transfer of the chlorosilanes plant valued at \$31.7 million. We further note that through an agreement with a subsidiary of SunEdison, Inc. that you will receive \$75.7 million from that subsidiary as reimbursement for the majority of the settlement costs. We note from the December 31, 2012 Form 10-K of your parent company (SunEdison, Inc., formerly MEMC Electronic Materials, Inc.), that the charges related to the Evonik agreements were previously allocated to SunEdison Inc.’s Solar Energy segment. Please tell us why the original charge in 2011 and subsequent adjustments in 2012 are now being allocated to the SunEdison Semiconductor, Inc. financial statements

given the historical treatment of these items as a part of the Solar Energy segment in your parent's financial statements and given that the majority of the net settlement amount is being paid by your parent company.

Note 8 – Accumulated Other Comprehensive Loss, page F-23

9. We note your revisions in response to comment 29. Please revise to also include the fiscal year 2011 amounts in this footnote.

Exhibit Index, page E-1

10. Please file the opinions mentioned in the first paragraph on page 126.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

Shaker Sadasivam
SunEdison Semiconductor, Inc.
November 19, 2013
Page 4

You may contact Gary Newberry, Staff Accountant, at (202) 551-3664 or Kevin Vaughn, Accounting Branch Chief, at (202) 551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Tom Jones at (202) 551-3602 or Mary Beth Breslin, Senior Attorney, at (202) 551-3625 with any other questions.

Sincerely,

/s/ Mary Beth Breslin for

Amanda Ravitz
Assistant Director

cc (via e-mail): Dennis M. Myers